



# Low-Emissivity Window Film

## What is this Technology?

Low-emissivity (low-e) window film is applied to the interior side of existing windows and contains silver and gold coatings that reflect outside heat in the summer and retain inside heat in the winter. Low-e coating has traditionally been applied to windows in a factory setting as part of a high-tech manufacturing process. This technology makes it possible to achieve the same insulating value by applying a thin coated-polyester film on-site.

## Why is GSA Interested?

Unlike traditional window films that are designed expressly to control summer heat gain, this low-e window film reduces both heat gain and heat loss. The manufacturer claims that it improves a single-pane window's insulating performance to that of a dual-pane window, or a dual-pane window's performance to that of a triple-pane, at a fraction of the cost of dual- or triple-pane window replacement. Low-e window film presents the possibility of considerable HVAC energy and cost savings throughout GSA's real-estate portfolio.



**ENERGY EFFICIENCY** Improved insulating performance enables between 20% and 30% greater cooling savings when compared to other solar-control-only films with equivalent solar-reflective properties. The technology also offers 20% average heating savings, while solar-control-only films offer minimal or negative heating savings.



**COST-EFFECTIVENESS** Because of this technology's potential for year-round energy savings, payback is estimated at four years or less for many opportunities. Specific energy and cost savings depend on factors including a building's window-to-wall ratio, window shading, climate, and utility rates.



**OCCUPANT SATISFACTION** By minimizing uncontrolled heat gain and heat loss, low-e window film promises to increase climate-related occupant satisfaction. This technology also reduces glare, allowing better diffusion of natural light within the environment and making it easier to see computer monitors.



**OPERATIONS & MAINTENANCE** Because low-e window film does not require additional maintenance over standard windows, its impact on O&M is negligible.



**DEPLOYMENT POTENTIAL** Low-e window film is suitable to windows in all climates but is especially effective in climates with both cooling and heating seasons of several months each.

*The Green Proving Ground program has commissioned Lawrence Berkeley National Laboratory to perform real-world measurement and verification of low-emissivity window film in a pilot installation in a federally-owned building. Findings from the evaluation are anticipated to be available in 2016.*



The Green Proving Ground program leverages GSA's real estate portfolio to evaluate innovative sustainable building technologies. The program aims to drive innovation in environmental performance in federal buildings and help lead market transformation through deployment of new technologies.